NOTES

LORD RAYLEIGH has been elected to the Chair of Experimental Physics at Cambridge, in succession to the late Prof. Clerk Maxwell.

A COMMITTEE has been appointed to receive subscriptions for the purpose of commemorating the retirement of Dr. Andrews from the vice-presidency of the Queen's College, Belfast, by a bust or portrait to be placed in the College, and a prize or scholarship to be founded in the same institution in connection with chemical science.

WE hear with regret that the Epping Forest Committee have rejected Mr. Alfred R. Wallace, whose candidature for the post of Superintendent of the Forest was supported by so many eminent men of science and also by a large number of the local inhabitants. The successful candidate is Mr. Alexander McKenzie, a landscape gardener, who may doubtless prove an able superintendent; but it is unfortunate that a man of Mr. Wallace's ability and knowledge should have failed to obtain a post which he could so well have filled for the benefit of the nation.

DR. PERCY has resigned the lectureship on metallurgy at the Royal School of Mines.

THE Rev. John Brown Maclellan, Vicar of Bottisham, Cambridgeshire, has been elected Principal of the Agricultural College, Cirencester, in place of the Rev. John Constable, who has resigned owing to ill-health. Mr. Maclellan is a distinguished classical scholar, having taken high honours in that department at Cambridge. He is the author of a work on "The Fourth Nicene Canon and Election and Consecration of Bishops," and of "A New Translation of the New Testament." We have failed to discover the special qualifications of this scholarly vicar for the position of head of an Agricultural College, which if anything is scientific. Of course the institution is a proprietary concern, and the Council has a right to do as it likes. By the by although this College has a charter, it has no right to the title of "Royal" which it assumes.

M. JANSSEN has been unable to see the sun for a number of days, owing to the almost constant prevalence of cloudy weather; but he states that, according to the results of his latest observations, the number of spots on the sun is very small, as well as the number of faculæ. He supposes that this last circumstance may be connected with the rigour of the present winter, although he is not in a position to state whether these faculæ are on the surface of the sun or produced by some change in the intervening medium. The construction of M. Janssen's observatory at Meudon has been interrupted by the inclemency of the weather. It will be resumed next spring. Meanwhile M. Janssen is completing his system of observation. An automatic instrument worked by a weight will take six photographs of the sun every twenty-four hours with a 9 inch refractor. The construction of a large refractor for observing celestial bodies is also proceeding.

OTHER three days' *Thunderer* gun experiments were made during the past week; the experiments will be resumed in a fortnight.

THE Belgian State-prize of 5,000 francs (200*l.*) which is awarded by the Royal Academy of Sciences every five years for scientific work was this year awarded to the director of Brussels Observatory, M. Houzeau, in recognition of his latest work, "Uranométrie générale, avec une Étude sur la Distribution des Etoiles visibles à l'Œil nu." There is another prize of 2,500 francs (100*l.*) awarded annually by the king, which was to be given away for the second time this year, and specially referred to architecture, but no worthy recipient could be found, although no less than ten different works had been submitted to the committee of judges.

THE University of Gottingen has become the possessor of a magnificent herbarium, containing over 40,000 specimens of plants from all parts of the world. It was left to the University by the late director of the Gottingen Botanical Gardens, Prof. Grisebach. There is no doubt that it is by far the largest collection of plants ever brought together by any single individual.

THE late Herr von Nathusius has left a very valuable library, consisting almost exclusively of works on natural history and agriculture, and numbering some 5,000 volumes. Besides this there is an osteological collection of some 2,500 animal skulls, 300 skeletons and parts of skeletons, a collection of some 20,000 pictures illustrative of animal life, and finally, a collection of about 8,000 samples of wool. Everything is in perfect condition, and arranged in the most scientific manner. The collections being of great value for agricultural museums, the Prussian government intends to purchase them for the Museum at Berlin Their value is estimated at 60,000 marks (3,000*l.*), and a present they remain still at Hundisburg, near Magdeburg, the seat of the deceased statesman.

THE death is announced of M. Claude Etienne Minié, the inventor of the carbine of that name. He was born in Paris in 1804.

A FORTNIGHTLY scientific contemporary makes the following extraordinary announcement concerning the late award of medals by the Royal Society:—"The Copley Medal to Prof. Rudolph J. E. *Clamins*, of *Rome*, for his researches upon heat; the *Davey* (*sic*) Medal to M. P. E. Lecoq de Boisbaudran, for his discovery of gallium; a Royal Medal to Mr. William Henry *Perkins*, F.R.S., for his long-continued and successful labours *in geology and physical geography*"! Was there ever such a nice "derangement of epitaphs?" The italics are ours.

THE frost having continued in Paris, the Seine was frozen on December 9. The maximum of cold was observed about one o'clock in the night from 8 to 9. – 24° C. has been observed at Montsouris in the shade, – 25° at La Varenne St. Maur, – 27° at Versailles.

IT has been suggested by the *Temps* meteorological editor, that the whole of Europe and a large part of Asia and Northern America being covered with snow, the appearance may be analogous to the red spot discovered on Jupiter by astronomers, and this may be considered as an indication that some unusual cooling influence prevails on the whole solar system.

MRS. CHAPLIN AYRTON has received the degree of M.D. from the Medical Faculty of Paris. She presented an elaborate thesis "On the General Dimensions and the Development of the Body among the Japanese."

THE Thames Embankment system of electric lighting has been extended to the Victoria Station of the Metropolitan District Railway. The station, we learn from the *Times* report, is 350 feet long, 50 feet wide, and 40 feet high. There are two platforms, each 15 feet wide, the railway space between them being 20 feet wide. There are ten lights in all, of which five are placed over the down-platform, dividing the length into spaces which are unequal owing to the interference of constructive details. Over the up-platform are four lamps, which alternate with the five on the other side so as to afford an equable distribution of light. The tenth lamp is placed centrally over the foot-bridge which connects the up- and down-platforms. The lights are produced and maintained by the same steam-engine which is maintaining the forty lights on the Embankment and the ten on the bridge. The engine is, therefore, now maintaining a total of sixty lights—a point of considerable importance. Of still greater importance, perhaps, from a scientific poin of view, as the *Times* remarks, is the distance to which the present machinery is transmitting the current. The distance marked on the map of the District Railway between their station at Charing Cross and that at Victoria is 2,383 yards, or 1·354 mile. The length of wire between the two stations, however, owing to curves and losses necessarily attending the laying, connecting, and fixing, is about 1·65 mile. The whole circuit is thus equal to a length of 3·30 miles. The ten lights are on two circuits, and are maintained by the two spare circuits of the Gramme machine which supplies the ten lights on Waterloo Bridge. The loading wire is similar to that used on the Embankment, being a cable of seven strands of No. 19 B. W. G. copper wire, highly insulated. The wires are laid through the tunnel of the railway, being fixed against the walls. There is a switch arrangement at the Victoria Station, so that the lights are started and extinguished on the spot, and are thus locally under control. This new development of electric lighting means something more than that sixty lights are now being successfully maintained from a single engine of twenty horse power nominal. It means that very considerable distances have been bridged over, and that, other things being equal, the application of electricity for illuminating purposes can be carried to distances from the source of power previously unbelieved in and by some unthought of.

MR. THOMAS FLETCHER, the well-known maker of scientific apparatus, of Museum Street, Warrington, must be a man of considerable public spirit, as well as enterprise. From a circular letter he has sent us we learn that a few friends interested in scientific matters, have decided to meet every Thursday evening for the winter months, at his house, with the object of discussing new or interesting scientific matters. The meetings will be informal, simply a social gathering of those interested in the progress of science. If the movement is appreciated by a larger number than can conveniently be accommodated, the question of forming a scientific club will afterwards be raised. The laboratory will, for the evening, be converted into a smoke room, and any apparatus will be at the service of all. Both these privileges will, we are sure, be largely appreciated. These meetings, Mr. Fletcher is careful to state, will be so arranged as to be little or no cost to himself, and therefore they will, so far as room permits, be open to all interested in matters likely to be brought forward, all being at perfect liberty to come and bring any friends. We heartily wish success to Mr. Fletcher's efforts to foster a love of science in Warrington.

VARIOUS statements have recently been published regarding the probable time of completion of the St. Gothard tunnel; few of them are correct. On Oct. 31 last, at 8.15 A.M., the boring machine on the northern side reached the centre of the tunnel at a depth of 7,460 metres. The meeting of the boring machines, however, cannot possibly take place before February next year. At the beginning of November there were still 717 metres of rock to be removed, and 50 metres per week is considered to be a fair average. On October 1 last the borings were some 261 metres short of the original programme, and on that day only 7,821 metres (total) of the tunnel were complete (instead of 11,579 metres, as stated in the original programme). A serious obstacle has quite recently been encountered in some soft strata, the enormous pressure of which has up to the present resisted all attempts at successful penetration. The most solid beams are bent like reeds after a little time, and a resistance-wall of 1 metre thickness was completely crushed. Another of 2 metres' thickness is now being constructed. The boring machine is useless in these strata, and only hand labour can be employed.

THE works for the railway across the Isthmus of Tehuantepec have been commenced. The line will be 150 miles long.

THE director of the zoological station at Trieste, Prof. Claus, of Vienna, has issued a report on the work done at the station since its opening in 1875 up to the end of 1878. It appears that no less than twenty-two zoologists have worked at the station (including ten Austrians and seven Germans), besides thirty-four students of zoology. Apart from a large number of smaller communications issued by the station, thirty-eight important scientific publications owe their origin to work done at that institution.

AT Magdeburg a grand agricultural exhibition will be held from May 28 to June 6, 1880, in celebration of the fortieth anniversary of the foundation of the Magdeburg Agricultural Society.

FOR the International Piscicultural Exhibition which will be opened at Berlin on April 20, 1880, a great number of specimen-collections have been already promised. Complete illustrations of the state of pisciculture in the various countries will be sent from Sweden, Norway, Italy, Holland, China, Japan, Canada, and the Malay Islands. Several crowned heads and the free cities of Hamburg and Bremen will award prizes to the exhibitors.

THE Paris Municipal Council has not yet taken any final decision on the question of gas *versus* electricity. At all events the Commission will propose to use Jablochkoff lights for illuminating the Place de l'Opera, and new experiments will be tried in the green room of the opera for deciding whether the Jablochkoff or Werdermann light will be selected for the interior.

DETAILS of the Temesvar earthquake of November 21 last are now to hand. It appears that two separate shocks were felt, a violent one at 12.5 A.M., and a weaker one shortly before 2 A.M. Numerous chimneys, vaults, cellars, &c., fell in in the town as well as in the surrounding villages. A third shock followed at 5.45 P.M., and a fourth one a little later. On the following days the shocks continued and were also noticed at Szakalhaza, Vukova, Stamora, Blazsova, Lippa, and other places in the district.

TWO shocks of earthquake are reported from Switzerland: one at Geneva on December 4, at 5.34 P.M., Greenwich mean time; the other at Berne, Bale, Aarau, and Schaffhausen, on December 5, at 2.32 P.M.

MANY of our readers will be glad to know that Messrs. Macmillan and Co. have published a translation of Pasteur's "Études sur la Biere," under the title of "Studies on Fermentation," by Messrs. Frank Faulkner and D. Constable Robb. The original work we noticed at length in NATURE, vol. xv. pp. 213, 249.

A DANGEROUS and infectious disease among bees is reported from Italy. It is caused by a microscopical fungus, and spreads with alarming rapidity. However, winter is not a favourable season for its propagation, and salicylic acid solution is said to be an infallible remedy against the disease.

IN the course of some excavations now going on in the bed of the Rhone, near Geneva, many interesting objects, assigned by archæologists to the age of polished stone, have been brought to light, the most curious of which is a scraper of jade, highly finished, and in a condition as perfect as when it left the hands of the workman. The question arises, the *Times* correspondent states, and is being warmly discussed by the learned in lacustrine lore, how this instrument, made of a mineral which exists in a natural state only in Asia, can have found its way into the Rhone gravel at Geneva. Was jade ever an article of trade between the West and the East in prehistoric times, or is this scraper a solitary specimen brought by Aryan wanderers from the cradle of their race on the Hindoo Koosh? As yet no satisfactory solution of the problem has been suggested.

THE *School of Mines Quarterly* is the title of a journal published under the auspices of the Chemical and Engineering Society of the School of Mines, Columbia College, New York, the first number of which has been sent us. It contains several good articles on chemical and engineering subjects. There seems no keeping pace with the scientific enterprise of our friends on the other side of the water.

FRIEDLANDER AND SON, of Berlin, have sent us their new Catalogue of Standard Publications in Astronomy and Geodesy, brought up to the present time

A FOURTH edition has been published of Mr. Thomas Christy's useful *brochure* on "Hydro-Incubation in Theory and Practice, a Guide to Commercial Poultry Farming." We have referred to the previous editions; the whole of the matter in this edition is stated to be new.

THE additions to the Zoological Society's Gardens during the past week include a Rhesus Monkey (*Macacus erythræus*) from India, presented by Mr. F. G. Lightfoot; a Bonnet Monkey (*Macacus radiatus*) from India, presented by the Rev. E. C. Ince; a Ring-tailed Lemur (*Lemur catta*) from Madagascar, presented by Mr. F. E. Colenso; a Black-headed Jay (*Cyanocorax nigriceps*) from South America, two Brant Geese (*Bernicla brenta*), European, purchased.

OUR ASTRONOMICAL COLUMN

THE COMET OF 1652.—The observations of this comet made by Hevelius between December 20, 1652, and January 8, 1653, it is remarked by Pingre, were probably the most precise, and certainly the most complete, of all; generally the observations were very rough. They were mostly collected, he adds, in a short dissertation published at Padua in 1653, which would appear to be that by Argoli, entitled "Andreæ Argoli Brevis Dissertatio de cometâ ann. 1652, 1653 et aliqua de meteorologicis impressionibus." Halley's orbit, the only one for this comet which figures in our catalogues, was calculated upon the observations of Hevelius.

Zach found another series of observations, which Pingre probably had not seen, and which upon reduction and discussion may prove to be second only to those of the Dantzic astronomer in merit; indeed, he thought they might be even more precise. These observations were made by an ecclesiastic residing at Rome, an Englishman, one calling himself, or being called by others, *Riccardo de Albis*, a name which, Zach suggests, is probably to be read *Richard White*, and he conjectures that he was probably a Jesuit of the Anglican College, where we know that another English Jesuit, LeMaire, Boscovich's assistant in geodetic work, also observed. The observations were sent from Rome in January, 1653, by a certain Raffaelo Magiotti to his good friend Candido del Buono at Florence, with a commission to present them to Prince Leopold of Tuscany, brother of the reigning Grand Duke Ferdinand II. Magiotti mentions that he had procured the observations with difficulty since De Albis himself intended to print them, *con molte puntualità*. Whether he did so or not does not appear; his name is not mentioned in the cometographies, and though Lalande enumerates some twenty publications referring to the comet of 1652, there is none under the name of De Albis. We are told that he observed with a good quadrant, but there is no reference to telescopic sights, though Zach says, with two such opticians as Campani and Divini at this time in Rome, it may well have been that he had telescopic aid.

The observations in question appear in Angelo Fabroni's little known "Lettere inedite di Uomini illustre," as a supplement to his greater work published at Pisa in 1768. They were made between December 21 and January 3, "hora 2 post occasum solis," and consist of distances from conspicuous stars. It may be of interest to reduce the observations of this scientific Englishman, and to calculate an orbit upon them; a strict copy was given by Zach in Lindenau and Bohnenberger s *Zeitschrift für Astronomie*, vol. iv.

In the same communication will be found some observations by a Roman patrician, one Arcieri, with "a good telescope of 9 palms, by Eustachio Divini." He saw the comet for the first time on December 19, "instar nubeculæ rotundatæ et candicantis, e cujus centro quiddam subricundum instar prunæ emicabat, ejusque diameter visiva erat 10 circiter minutorum." On December 21, its diameter was fifteen minutes. It seems to have been well seen on the following night, when we read "Porro cauda illius (quæ rarissima quidem erat, tenuissimaque) in oriente vergens, æquabat longitudine spatium pene 8 graduum, et dimetiens visiva excreverat jam ad 20 fere minuta." On December 23 it appeared much more obscure, but on December 24 at the fourth hour of the night the tail was brightest, the head being one degree from the Pleiades. Five nights later it was distant "circiter 30 minutis a capite Medusæ versus Plejadas, multum imminutus obscuratusque, nullumque caudæ vestigium apparebat." On January 1 it was as bright as a star of the fourth magnitude, and two nights later was hardly equal to one of the fifth.

Pingre remarks that in the judgment of Hevelius and Comiers this comet almost equalled the moon in size. It was nearest to the earth on December 19, when its distance was 0·13 of the earth's mean distance from the sun, so that it approached our globe as close as its orbit admits.

METEORS ON OCTOBER 19.—M. E. Block, of Odessa, records a notable shower of meteors on the morning of October 19, between 3h. and 5h.; he says he had not previously seen so many meteors. In an interval of ten minutes he counted fourteen which passed through the field of his comet-seeker, two degrees in diameter; the radiant was at β Aurigæ, or in about R.A. 88°, Decl. 45°. This radiant agrees nearly with No. 92 in Major Tupman's list.

GEOLOGICAL NOTES

UPPER DEVONIAN ROCKS OF THE NORTH OF FRANCE.—In a recent communication to the Geological Society of the North of France, Prof. Gosselet has brought forward some important new data, obtained from some fresh railway-cuttings between Féron and Semeries, as to the classification and palæontology of the Upper Devonian rocks. Arranging the Upper Devonian into an inferior group—the *Frasnien* comprising the zone of *Rhynchonella cuboides* and that of *Cardium palmatum*, and a superior group—the *Famennien*, in which are placed the Schistes de Famenne, the Psammites de Condros, and the Calcaire d'Etrœungt, he proceeds to show that in sections exposed in the railway-cuttings with a perfect conformable succession of strata and of fossils, the zone of the Psammites de Condros, so well marked elsewhere in the north of France and Belgium, is absent. He regards this arenaceous series to be represented in the district between Avesnes and Fourmies by argillaceous shales. It is easy to recognise at least an upper and lower member in the Famennian group. The former is distinguished by the prevalence of Carboniferous forms, particularly *Spirifer laminosus*, the latter by the rarity of Carboniferous forms and by the abundance of *Cyrtia Murchisoniana*. Every fresh section which tends to elucidate the relations of the Devonian rocks to the formations below and above them possesses a special interest for British geologists.

TERTIARY QUARTZITES OF THE ARDENNES.—Dr. Charles Barrois has laid before the same Society an interesting paper on the extension of the Lower Tertiary beds of the Paris basin across to the Palæozoic plateau of the Ardennes. He shows that the lower members, consisting of sandstones and conglomerates, can be traced by their fragments for a long distance to the north-east, and that these fragments, like our own Grey Wethers or Sarsen stones, are portions of deposits which have been gradually broken up and weathered in place. The existence of these boulders has long been recognised and they have been variously explained, being sometimes considered as drifted blocks. Dr. Barrois, however, demonstrates their true origin by tracing them step by step to their source in the Gres Landeniens. He makes some suggestive remarks regarding the superficial alteration of some of these rocks. In the centre they are undoubted sandstones, but towards the exterior they become progressively harder till they pass into true quartzite. He even obtained specimens of sandstone covered with a mere coating of quartzite two centimetres in thickness. He observed that in proportion as they are traced eastward, that is, into tracts where they must have been longer exposed to atmospheric influences, the alteration penetrates further into them. A microscopic examination failed to afford him any clue to the process of alteration. The quartzite when examined in thin sections